

Image-based spatiotemporal air pollution with deep learning methods

Poor ambient air quality represents one of the largest environmental risks to public health. Long-term exposure to air pollution associates with chronic respiratory and cardiovascular diseases. Spatial-temporal air quality prediction is of vital importance in understanding the health effects of air pollution and for making scientific recommendations. Ground sensor networks are usually sparse and incidental, especially in developing countries, and can have a low resolution in space and/or time. But air pollutants such as NO₂ are highly dynamic spatial-temporally. Statistical mapping methods of air pollution commonly use relationships between GIS predictors (e.g., population) and covariates (regression) but it is difficult to find all the relevant predictors. This project invests in novel deep learning-based computer vision methods to automatically extract features from remote sensing imagery and thematic maps for air pollution mapping.

Keywords: deep learning, air pollution, remote sensing